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December 13, 2017

VIA ELECTRONIC FILING

The Honorable Richard G. Andrews
United States District Court for Delaware
844 North King Street
Wilmington, Delaware 19801

Re: *TQ Delta, LLC v. 2Wire, Inc.*, C.A. No. 13-cv-1835-RGA
TQ Delta, LLC v. ZyXEL Communications, Inc. et al. (C.A. No. 13-2013-RGA) and
TQ Delta, LLC v. ADTRAN, Inc. (C.A. No. 14-954-RGA; C.A. No. 15-121-RGA)

Dear Judge Andrews:

Response re TQ Delta's Request to Change the Asserted Claims in the '686 Patent

TQ Delta should not be permitted to replace the one asserted claim that the parties have been litigating for over three years from U.S. Patent No. 7,570,686 with two new independent claims at this stage of the litigation, because (1) TQ Delta has not shown good cause for the change, and (2) allowing them to do so will unduly prejudice Defendants 2Wire, ZyXEL and ADTRAN. TQ Delta chose to assert claim 5 of the '686 patent over three years ago. Only after the Court held a claim construction hearing where the majority of the terms argued were in claim 5, and a second claim construction hearing on November 17, 2017, solely devoted to terms in claim 5, did TQ Delta propose changing its asserted claims. TQ Delta then waited nearly three weeks to give a take-it-or-leave-it proposal to Defendants. *See* D.I. 437, Ex. A. After Defendants and the Court have expended so much effort on claim 5, TQ Delta should not be permitted at this point in the litigation to switch claims to stave off a potential adverse ruling.

1. TQ Delta Cannot Show Good Cause or Diligence in Seeking to Assert New Claims.

TQ Delta must show good cause for asserting new claims at this late date. *See Masimo Corp. v. Phillips Elecs. North America Corp.*, 918 F. Supp. 2d 277, 284, 286 n. 52

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(D. Del. 2013) (“early claim reduction is warranted before claim construction briefing” and “good cause” is required for any modification after the number of asserted claims is limited); *see also St. Clair Intellectual Property Consultants, Inc. v. Matsushita Electric Industrial Co., Ltd.*, 2012 WL 1015993, *5 (D. Del. March 26, 2012) (“The good cause standard under Federal Rule of Procedure 16(b) applies to a request to amend asserted claims and infringement contentions.”) (citation omitted). “The good cause element requires the movant to demonstrate that, despite diligence, the proposed claims could not have been reasonably sought in a timely manner.” *St. Clair*, 2012 WL 1015993 at *5.

TQ Delta has shown neither good cause nor diligence in seeking to change its asserted claims. It identifies no good reason why it should be allowed to substitute claims. Plaintiff had to know of the potential issues it has encountered with claim 5 of the ’686 patent from the beginning, yet it chose to select and assert claim 5 anyway. Then, only after years of litigation and after it appreciated that it may suffer adverse claim construction rulings did TQ Delta raise the possibility of asserting a different claim. TQ Delta certainly must have reviewed the many Family 1 claims available to it before choosing to assert claim 5 in this litigation over three years ago, and understood that claim 5 recited the term “DMT signal” as opposed to “DMT symbol” as the other claims in the ’686 patent do. It may therefore be inferred that TQ Delta made a strategic choice to assert and litigate the only independent claim in the ’686 patent that uses the term “DMT signal.” TQ Delta even selected claim 5 of the ’686 patent as a “representative claim” over two years ago on May 19, 2015. Failing that, TQ Delta knew nearly eight months ago when Defendants served proposed terms and constructions that Defendants asserted that the term “each bit in the diagnostic message is mapped to at least one DMT signal” was indefinite. *See* D.I. 282 (Notice of Service filed April 20, 2017).

TQ Delta then proceeded with claim 5 through claim construction briefing and a first claim construction hearing on September 5, 2017. Following that hearing, the Court requested additional briefing and an evidentiary hearing with expert testimony directed solely at terms in claim 5. TQ Delta could have proposed claim substitution then, instead of requiring the parties and the Court to conduct a second *Markman* hearing devoted solely to issues with claim 5. In the meantime, TQ Delta also received adverse rulings in IPRs on three of the five patents asserted from Family 1. *See* D.I. 396 (Notice of Decision). The possibility of dropping claim 5 and substituting another claim was only first mentioned at the evidentiary hearing on November 17, 2017. Then, TQ Delta waited nearly another three weeks to even present a take-it-or-leave-it proposal to Defendants while Defendants were continuing to work on Court-ordered briefing regarding outstanding claim 5 issues,

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e.g., the briefing due on December 8 summarizing the testimony at the evidentiary hearing on the “DMT symbol” terms. *See* D.I. 434. The Court should not allow TQ Delta to change its asserted claims to fix obvious problems that it should have been aware of long ago.

As one court has correctly noted, if an adverse *Markman* ruling (or the possibility of an adverse *Markman* ruling) constituted “good cause” for allowing a patent plaintiff to drop and substitute asserted patent claims, the claim selection and construction process would never end. Each time a plaintiff suffered an adverse claim construction ruling, it could simply choose a different claim to assert instead. This is not the law. *See, e.g., Ameranth, Inc. v. Menusoft Systems Corp.*, 2010 WL 11530914 (E.D. Tex. Aug. 23, 2010) (granting motion to strike and observing that “[u]nder Ameranth’s view of the ‘good cause’ threshold, any plaintiff could assert new claims under [the local rule] if the court adopts one of the defendant’s proposed claim constructions.”); *cf. PersonalWeb Techs. LLC v. Int’l Bus. Machs. Corp.*, 2016 WL 7888034, at *2-3 (N.D. Cal. July 25, 2016) (Where plaintiff’s constructions were adopted “[i]t does not follow that PersonalWeb must now react to the claim construction by asserting new claims against Tivoli that PersonalWeb was not in a position to assert prior to the claim construction hearing and order.”).

2. TQ Delta’s New Asserted Claims Would Not Moot All Claim Construction Disputes.

Allowing TQ Delta to assert claims 24 and 36 would not reduce the number of disputes regarding the ’686 patent. First, claim 24 uses the same “message determination module” language as claim 5. So the claim construction and indefiniteness issues raised by Defendants with respect to that term from claim 5 still would need to be resolved by the Court. Claims 24 and 36 may pose indefiniteness issues of their own, which Defendants would need to investigate. For example, claim 36 recites “instructions that when executed direct a transceiver to receive . . . an initiate diagnostic mode message,” which may be indefinite and/or lack written description. Similarly, claim 36 recites “wherein the diagnostic message comprises a plurality of data variables representing the diagnostic information about the communication channel,” which may also have issues with indefiniteness and written description.

Second, TQ Delta’s assertion that letting it change its claims would moot any dispute as to the “mapped” limitation is not correct. Claims 24 and 36 recite different language – “DMT symbols that are mapped to one bit of the diagnostic message” versus claim 5 stating “each bit in the diagnostic message is mapped to at least one DMT signal.”

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In discussing these claims at the first claim construction hearing, 2Wire's counsel argued that claims 24 and 36 (among others) claimed the one bit per DMT symbol modulation scheme that TQ Delta was trying to read on claim 5. *See* D.I. 437 at p. 3 (quoting 9/5/17 transcript at 107:9-108:21). This does not mean, however, that Defendants are estopped from arguing against a new claim construction proposed by TQ Delta, or bound by 2Wire's counsel's arguments. *See Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1556 (Fed. Cir. 1995) (“[t]he judge's task is not to decide which of the adversaries['] constructions] is correct. Instead the judge must independently assess the claims, the specification, and if necessary the prosecution history, and relevant extrinsic evidence, and declare the meaning of the claims.”); *Fuji Photo Film v. Int’l Trade Comm’n*, 386 F.3d 1095, 1101 (Fed. Cir. 2004) (stipulated claim construction was not binding because the ALJ's acceptance of the stipulation did not constitute formal claim construction); *Lam Res. Corp. v. Schunk Semiconductor*, 65 F. Supp. 3d 863, 870 (N.D. Cal. 2014) (noting that “the scope and meaning of claim terms in a patent is a question of law” and finding that unilateral statements in invalidity contentions did not create estoppel). No dispute was resolved by the Court, so estoppel does not apply. *See Lava Trading, Inc. v. Sonic Trading Mgmt., LLC*, 445 F.3d 1348, 1353 (Fed. Cir. 2006) (finding that litigant was not barred from departing from previously unsuccessful claim construction theories on appeal). Moreover, at the time of the hearing, TQ Delta disputed Defendants' interpretation of both claim 5 and their characterization of claims 24 and 36. *See* Ex. A (9/5/17 Hearing Tr.) at 109:19-111:11. TQ Delta should not be permitted to switch positions and now agree with Defendants' counsel just for expediency.

TQ Delta's new position that claims 24 and 36 purportedly cover mapping one bit per DMT symbol is inconsistent with testimony given under oath by their expert as well as their positions throughout this litigation. At the second hearing on the DMT symbol terms, TQ Delta's expert, Dr. Chrissan, testified that bits are mapped to a DMT signal, not a DMT symbol. Ex. B (11/17/17 Hearing Tr.) at 51:13-52:2; 53:8-14. He also testified that one of ordinary skill in the art would “immediately” understand that the limitation “each bit in the diagnostic message is mapped to at least one DMT signal” refers to the “one bit per DMT symbol modulation encoding scheme” described in the specification. *Id.* at 17:18-18:13. If, according to TQ Delta's expert, claim 5 so clearly recites the one bit per DMT symbol modulation encoding scheme, it cannot possibly be true that the very different claim language in claims 24 and 36 claim that same modulation scheme. In sum, giving TQ Delta a do-over to pick different asserted claims will not resolve the claim construction dispute between the parties. Coupled with the time and effort that the Court

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and Defendants have already expended on claim 5 of the '686 patent, allowing TQ Delta to switch claims would not promote judicial efficiency or reduce the burden on the Court.

3. Defendants Would Be Severely Prejudiced If TQ Delta Were Permitted to Assert New Claims.

TQ Delta's argument that Defendants would not be prejudiced if TQ Delta was allowed to withdraw claim 5 and add two new claims, 24 and 36, completely ignores the hundreds of thousands of dollars of legal expenses that Defendants have been required to incur to litigate the many issues relating to claim 5. No one forced TQ Delta to select claim 5, requiring Defendants to incur all of these costs. TQ Delta should not be allowed to assert a different claim merely because it now fears an adverse ruling.

Courts routinely deny similar attempts to add or substitute claims after claim construction because allowing a patent plaintiff to do so would promote gamesmanship and significantly prejudice defendants. *See, e.g., Extreme Networks, Inc. v. Enterasys Networks, Inc.*, 2007 WL 5448209, *2 (W.D. Wisc. Dec. 31, 2007) ("I cannot agree with plaintiff that a party may assert new claims at any point in the litigation. This would cause significant unfair prejudice to the other side and give a perverse incentive to plaintiffs to withhold notice of the new claim until the last possible moment. That cannot be the law."); *Realtime Data, LLC v. Packeteer, Inc.*, 2009 WL 2590101, at *8 (E.D. Tex. Aug. 18, 2009) (denying motion for leave to amend infringement contentions in light of prejudice to defendants if claims could be added or changed after "the parties had already proceeded through nine months of discovery"); *Ameranth, Inc.*, 2010 WL 11530914 (granting motion to strike and observing that "[u]nder Ameranth's view of the 'good cause' threshold, any plaintiff could assert new claims under [the local rule] if the court adopts one of the defendant's proposed claim constructions."). Some courts award attorney's fees under these circumstances. *See American Standard, Inc. v. York Int'l Corp.*, 244 F.Supp.2d 990, 997 (W.D. Wisc. Dec. 20, 2002) (citing "plaintiffs' midstream switch in asserted claims" as a factor in awarding attorneys' fees).

Defendants would be severely prejudiced if TQ Delta were permitted at this juncture to substitute even a single new claim for claim 5. In this multi-defendant litigation where TQ Delta has asserted over two dozen patents against each Defendant, Defendants and the Court have already expended considerable effort in litigating claim 5 of the '686 patent. Since TQ Delta identified claim 5 over three years ago in August of 2014, Defendants and the Court have done the following with respect to this claim:

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- Defendants prepared and served an identification of claim terms for construction and proposed definitions (including the heavily disputed “DMT signal” related terms) on April 18, 2017. *See* D.I. 282. Defendants met-and-conferred on claim construction following those exchanges.
- Defendants drafted and served two claim construction briefs and supporting expert declarations addressing multiple terms in claim 5 of the ’686 patent (including the “DMT signal” related terms) on July 10, 2017 and August 14, 2017.
- The Court requested additional claim constructions on the “message determination module” term from claim 5 on September 1, 2017, and Defendants responded. *See* D.I. 349 (oral order), D.I. 350.
- The Court held a claim construction hearing lasting several hours on the Family 1 patents on September 5, 2017.
- In response to the Court’s request for additional briefing on the “message determination module” term in the ’686 patent, Defendants prepared an opening brief, served on November 7, 2017. Following TQ Delta’s service of a reply brief nearly twice as long as the page limits, Defendants met and conferred with TQ Delta’s counsel, received and reviewed a shortened brief from TQ Delta, and are scheduled to serve their sur-reply brief on December 15, 2017. *See* D.I. 428.
- The Court held an evidentiary hearing on the “DMT symbol” terms in claim 5 on November 17, 2017. Defendants prepared and presented testimony from their technical expert, Dr. Krista Jacobsen.
- Defendants filed a letter brief regarding the November 17, 2017 evidentiary hearing on Friday, December 8, per the Court’s order.

In short, much of the effort in claim construction, particularly during the last several months, has been focused on claim 5 of the ’686 patent, and Defendants and the Court have expended considerable resources litigating it. TQ Delta should not be permitted to obtain a “do over” now that claim 5 may not be construed by the Court as TQ Delta had hoped.¹ No one forced TQ Delta to choose to assert claim 5. Defendants would be severely prejudiced if TQ Delta was permitted to simply identify claims that it now thinks may be better for it than claim 5.

¹ If the Court allows TQ Delta to substitute claims, claims 5 and 7 should be dismissed with prejudice. TQ Delta should not be allowed to avoid an adverse claim construction on the one hand, while still preserving the chance to assert these claims against Defendants on the other.

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TQ Delta's argument that Defendants' assertion of prejudice "ring hollow" ignores completely the time and effort Defendants have expended on claim 5, and the additional time and effort they will have to spend litigating TQ Delta's proposed new claims. TQ Delta's argument assumes that its claim construction position is correct and will be adopted by the Court. With respect to its infringement contentions, TQ Delta stops far short of saying that its contentions for claims 24 and 36 will be the same. TQ Delta says only that its new charts would not be "substantively different." Further, TQ Delta's letter entirely ignores the prejudice to Defendants from having to do invalidity contentions for claims 24 and 36. Defendants' invalidity contentions were focused on claim 5 and its particular language, including "DMT signal." Defendants would need to start over with new invalidity contentions if TQ Delta was permitted to assert claims 24 and 36 now.²

Finally, TQ Delta is again seeking to expand the case by doubling the number of asserted claims from the '686 patent by replacing claim 5 with claims 24 and 36. Currently, and throughout most of the claim construction process, the only asserted claim from the '686 patent is claim 5. TQ Delta previously withdrew claim 7. *See* D.I. 342, at 18 ("During the meet-and-confer process, Plaintiff agreed to withdraw previously-asserted claim 7 of the '686 patent, and it is no longer asserted in this case."). Yet now, following the Court's comments on claim 5 during multiple claim construction hearings, TQ Delta proposes to substitute two new claims – 24 and 36 – for claim 5. TQ Delta should not be allowed to increase the number of asserted claims by substituting two claims for claim 5.

Accordingly, the Court should deny TQ Delta's request for a do-over to substitute asserted claim 5 of the '686 patent with claims 24 and 36.

² TQ Delta's proposal to push back the Family 1 trial date to allow for all of the additional work that would need to be done to litigate two new claims from the '686 patent hardly ameliorates the prejudice to the defendants. To the contrary, it only increases the prejudice.

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Respectfully,

/s/ Jody C. Barillare

Jody C. Barillare (#5107)

CFC/lmg

Enclosure

c: All Counsel of Record (By CM/ECF)

EXHIBIT A

1 IN THE UNITED STATES DISTRICT COURT

2 IN AND FOR THE DISTRICT OF DELAWARE

3 - - -

4 TQ DELTA, LLC, : CIVIL ACTION
5 :
6 Plaintiff, :
7 :
8 vs. :
9 :
10 2WIRE, INC., :
11 :
12 Defendant. : NO. 13-1835-RGA
13 ----- :
14 TQ DELTA, LLC, : CIVIL ACTION
15 :
16 Plaintiff, :
17 :
18 vs. :
19 :
20 ZHONE TECHNOLOGIES, :
21 INC., :
22 Defendant. : NO. 13-1836-RGA

23 - - -

24 Wilmington, Delaware
Tuesday, September 5, 2017
9:05 o'clock, a.m.

- - -

BEFORE: HONORABLE RICHARD G. ANDREWS, U.S.D.C.J.

- - -

Valerie J. Gunning
Official Court Reporter

1 TQ DELTA, LLC, : CIVIL ACTION
2 : :
3 Plaintiff, : :
4 : :
5 vs. : :
6 : :
7 : :
8 ZYXEL COMMUNICATIONS, : :
9 INC. and ZYXEL : :
10 COMMUNICATIONS : :
11 CORPORATION, : :
12 : :
13 Defendants. : NO. 13-2013-RGA
14 ----- : :
15 TQ DELTA, LLC, : CIVIL ACTION
16 : :
17 Plaintiff, : :
18 : :
19 vs. : :
20 : :
21 ADTRAN, INC., : :
22 : :
23 Defendant. : NO. 14-954-RGA
24 ----- : :
 ADTRAN, INC., : CIVIL ACTION
 : :
 Plaintiff, : :
 : :
 vs. : :
 : :
 TQ DELTA, LLC, : :
 : :
 Defendant. : NO. 15-121-RGA

- - -

APPEARANCES :

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2WIRE, INC.

Counsel for Defendant
2WIRE, INC.

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P R O C E E D I N G S

(Proceedings commenced in the
courtroom, beginning at 9:05 a.m.)

THE COURT: Good morning. Please
be seated.

This is a Markman hearing in TQ
Delta versus 2Wire, Civil Action No. 13-1835,
and I have appearances.

Mr. Farnan?

MR. FARNAN: Good morning, your
Honor. Michael Farnan on behalf of plaintiff.
With me today are Pete McAndrews and Rajendra
Chiplunkar of McAndrews, Held & Malloy.

THE COURT: All right. Well, good
morning to you both.

MR. McANDREWS: Good morning, your
Honor.

THE COURT: And Mr. Connolly?

MR. CONNOLLY: Good morning, your
Honor. Colm Connolly of Morgan Lewis on behalf
of defendant 2Wire, and with me from the Goodwin
firm are Brett Schuman --

1 per DMT symbol only. That's not claim 5. If
2 it's covered in this patent anywhere, it's one
3 of these other 19 claims that they have not
4 asserted.

5 Unless there are any other
6 questions, your Honor, that's all I have.

7 THE COURT: Thank you, Mr.
8 Schuman.

9 MR. SCHUMAN: Thank you, your
10 Honor.

11 MR. McANDREWS: Let me take that
12 in reverse order, and if you can leave this up,
13 that would be helpful.

14 This is actually a new argument.
15 We have not heard this argument before. We've
16 kind of wondering where they might go given the
17 concessions and their surreply declaration that
18 they didn't really acknowledge here.

19 This is a new argument, but I
20 actually think that they got it wrong. So the
21 language of the claim, the language of the
22 element is each bit in the diagnostic message is
23 mapped to at least one DMT signal. His argument
24 was that this is non-limiting. It doesn't

1 require one bit per DMT signal. It certainly
2 does.

3 So one bit per one DMT signal is
4 within the scope of the claim, and one bit per,
5 one bit being mapped to two DMT signals is
6 within the scope of the claim. And I think his
7 argument, check me if I'm wrong here, but I
8 thought his argument was this doesn't limit it.
9 He was saying you could put multiple bits on a
10 single DMT symbol is what his argument was but
11 that's not what the claim language says.
12 Actually, what the claim language says here is
13 actually the same thing that it says here. This
14 is not talking about multiple bits on a symbol.
15 These claims actually have flipped it, so you're
16 going to map a symbol to a bit or you are going
17 to map a bit to a symbol, which is essentially
18 the same thing, but this is talking about
19 multiple symbols, plural. It says DMT symbols
20 that are mapped to one bit of the diagnostic
21 message. So this is actually not the at least
22 one version. This is actually requiring plural
23 symbols to carry just one bit.

24 DMT symbols, multiple of them,

1 according to these claims, each carry just one
2 bit of the diagnostic message. The flip side of
3 that is the claim language that we have in the
4 asserted patent, which is each bit in the
5 diagnostic message is mapped to at least one DMT
6 symbol. That's one bit per one DMT signal or
7 one bit per multiple DMT symbols, or signals or
8 symbols. This argument is, they're conceding
9 our, for purposes of this argument, they are
10 conceding our construction, that the signal has
11 the single symbol period.

12 Do you have any questions about
13 that? Did you hear something different than
14 what the argument was because I thought that's
15 what his argument was, that somehow the claim
16 language didn't limit it to one bit per symbol
17 or one bit per separate instances of symbol. I
18 thought I heard him say that it could be more
19 than one bit per symbol, but that's not what the
20 claim language says, and I think his suggestion
21 was that therefore it's claiming a different
22 embodiment, but I don't understand how that
23 could be.

24 Now, he spends a lot of time

EXHIBIT B

IN THE UNITED STATES DISTRICT COURT

IN AND FOR THE DISTRICT OF DELAWARE

- - -

TQ DELTA, LLC,	:	CIVIL ACTION
	:	
Plaintiff,	:	
	:	
vs.	:	
	:	
2WIRE, INC.,	:	
	:	
Defendant.	:	NO. 13-1835-RGA
-----	:	
TQ DELTA, LLC,	:	CIVIL ACTION
	:	
Plaintiff,	:	
	:	
vs.	:	
	:	
ZHONE TECHNOLOGIES, INC.,	:	
	:	
Defendant.	:	NO. 13-1836-RGA

- - -

Wilmington, Delaware
 Friday, November 17, 2017
 2:00 o'clock, p.m.

- - -

BEFORE: HONORABLE RICHARD G. ANDREWS, U.S.D.C.J.

- - -

Valerie J. Gunning
 Official Court Reporter

1 **APPEARANCES:**

2 **FARNAN LLP**

3 **BY: MICHAEL J. FARNAN, ESQ.**

4 **-and-**

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22 **Zhone Technologies, Inc.**
23
24
25

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5 **Adtran, Inc. and Zyxel Communications,**
6 **Inc. and Zyxel Communications Corporation**

7 **ALSTON & BIRD**

8 **BY: ELIZABETH RADER, ESQ.**
9 **(Washington, D.C.)**

10 **Counsel for Defendant**

11 **Zyxel Communications**

12 - - -

Chrissan - direct

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P R O C E E D I N G S

(Proceedings commenced in the courtroom,
beginning at 2:00 p.m.)

THE COURT: All right. Please, everyone, be
seated.

This is the expert testimony relating to a
Daubert, to a claim construction hearing in TQ Delta versus
various, sorry, case number 13-1835.

So, Mr. McAndrews, do you want to call your
witness?

MR. McANDREWS: Yes. Good afternoon, your
Honor. The plaintiff calls Dr. Doug Chrissan to the
stand.

Civil action No. 13-1835, 36, 13-2013, 14-954
and 15-121-RGA.

PLAINTIFF'S TESTIMONY

... DOUGLAS A. CHRISSAN, having been
duly sworn as a witness, was examined and
testified as follows ...

DIRECT EXAMINATION

BY MR. McANDREWS:

Q. Good afternoon, Dr. Chrissan. If you could please
state your full name and provide your address for the

Chrissan - direct

1 average.

2 The other excerpts, as she notes, accordingly, a
3 skilled artisan encountering the term DMT signal would have
4 had no reason to expect that the DMT signal to be limited in
5 duration and would naturally have expected it to span
6 multiple DMT symbol periods.

7 So her assertion is that the DMT signal is not
8 limited in duration or necessarily limited in duration.

9 Q. But you find her statement that it's at a minimum
10 defined in multiple symbol periods to be inconsistent with
11 the original statement?

12 A. I'm sorry. Could you repeat your question?

13 Q. So she says that it would span multiple DMT symbol
14 periods. Would you agree that she's then conceding
15 that a DMT signal is discernible in terms of DMT symbol
16 periods?

17 A. Yes. Yes.

18 Q. All right. Now, so you've described in general what
19 DMT signal means, what DMT symbol means. Can you tell me
20 how that relates to the intrinsic evidence of the Family 1
21 patents?

22 A. Yes. As stated on my first slide, the claim term is
23 each bit in a message is mapped to at least one DMT signal.
24 When looking at that claim term and reviewing the patent
25 specification, a person of skill in the art would be

Chrissan - direct

1 immediately directed to Column 3 at 46 through 58 of the
2 patent at issue immediately, and I say immediately because
3 the claim says, the claim talks about a message and its bits
4 are transmitted one bit per DMT signal. The only discussion
5 in the patent of transmitting a bit in a message is this
6 section, where it describes one bit per DMT symbol. It
7 gives an example of that modulation from a relevant standard
8 at the time, which I will get into, and then, more
9 importantly, as you move down, it literally describes in
10 that modulation scheme that a zero is sent using a REVERB1
11 signal and a 1 is sent using a SEGUE1 signal. I will get
12 into what those mean, but those are defined in the relevant
13 standard.

14 REVERB1 is a known signal modulated using DM.
15 The SEGUE1 is a known signal modulated using DMT. REVERB1
16 is a DMT signal, SEGUE1 is a DMT signal. Those are
17 exemplary DMT signals and that's what the claim means. I
18 don't even -- I believe that one with less qualifications
19 than what's described as a person of skill in the art by
20 Dr. Jacobsen or myself would understand that. In fact,
21 2Wire, a company that makes these modems, filed a 101
22 motion on this patent at the beginning of this year, and in
23 one of their briefs, around the middle of the brief, I
24 believe it was page 8, they literally make the connection.
25 They say, what's described in the claim as each bit is

Chrissan - cross

1 Q. Right. Mapping doesn't happen after the digital to
2 analog converter spits it out onto the transmission line;
3 right?

4 A. But in the general sense, one understands that bits
5 are maps of the signal. Otherwise, they wouldn't get to the
6 other side.

7 Q. Right. The bit doesn't get to the receiver unless it
8 has been mapped -- under any modulation scheme, a bit does
9 not get to the other end unless it is loaded onto the
10 transmission wire?

11 A. Yes. It has to be -- it has to be represented by a
12 signal.

13 Q. Right. But whether a person of ordinary skill in the
14 art talks about mapping bits or loading bits, we're talking
15 about the process that's represented in color on the
16 left-hand side of your diagram; right? That's where the
17 loading occurs?

18 A. I think my answer, my previous answer still stands.
19 In the most, in the strict sense, the mapping happens at the
20 QAM encoder. In the general sense, the mapping is on the --
21 is to the signal that's transmitted.

22 Q. Right. But even in the general sense, the mapping has
23 to happen before that digital to analog converter spits out
24 the analog signal and it goes off on the wire; is that
25 right?

Chrissan - cross

1 A. My answer is the same. I'm just going to repeat the
2 same answer.

3 Q. Well, let me ask it a different way. Once the
4 transmitter has spit out the analog signal and it's off on
5 the wire, how can you map bits to it?

6 A. Well, let me put it this way. When we were -- at the
7 beginning of our discussion, I said, the beginning of this
8 section of the discussion, we can use modulated, mapped,
9 loaded interchangeably, so I entered this discussion under
10 the assumption that modulated, mapped and encoded meant the
11 same thing. I didn't know that you were going to get picky
12 to this level.

13 The modulation actually happened at the IFFT.
14 So you could say that the bit mapping happens here. You
15 know, under my interpretation that the terms were
16 interchangeable because I didn't expect you to get into such
17 low level details about this signal processing chain, you
18 could say the bits are loaded during modulation, and as I
19 said, ultimately, you can say that the bits are loaded onto
20 that transmission signal. Otherwise, they wouldn't get to
21 the other side.

22 Q. Right.

23 A. So we'll have to be more precise about terminology if
24 we're going to get into such details.

25 Q. Right. And I'm trying to be precise, so I will

Chrissan - cross

1 just ask you one more time. Then we can move on, Dr.

2 Chrissan.

3 Under any of the components you just shined your
4 laser pointer on, wherever that mapping occurs, that's all
5 before the transmitter spits out the DMT signal, the box on
6 the far right of your screen; isn't that right?

7 A. I don't interpret it that way.

8 Q. Can you map a digital bit all the way on the far left
9 to an analog signal after it has been created by the digital
10 to analog converter?

11 A. I believe that's what the whole processing chain does.
12 The whole processing chain -- the purpose of the whole
13 processing chain is to map bits onto signals. Otherwise,
14 they wouldn't get to the other side.

15 Q. Right. The processing, meaning the mapping of the
16 bit, happened somewhere before the analog signal is created.
17 Would you agree with me there?

18 A. Well, okay. What happens here is the bit is, the bits
19 are encoded.

20 Q. Actually, first they're loaded onto the subcarriers;
21 right? You skipped a step?

22 A. Well, the bits are encoded onto subcarriers. The bits
23 here, these bits in complex numbers out, so complex meaning
24 real and imaginary part.

25 So the two bits goes in. One comes out is the